

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 2

In the Specification:

Please replace paragraphs [0002], [0024], [0038], [0042]-[0047], [0055], [0056], [0058] and [0060] with the following amended paragraphs.

[0002] Rearview mirrors for vehicles include both interior rearview mirrors and exterior rearview mirrors that allow a driver of the vehicle to view objects behind the vehicle. Recently, rearview mirrors have included lights. These lights can include map lights, contour/mood lights and security lights. Map lights typically have an on/off switch allowing the driver and/or passengers of the vehicle to turn the map light on or off. The map light provides sufficient illumination to the driver and/or passengers of the vehicle to read maps and see other items in the passenger compartment of the vehicle. An example of a map light is disclosed in U.S. Patent Application Publication No. ~~US2003/0043590 A1~~, No. 6,805,474, entitled VEHICLE LAMP ASSEMBLY WITH HEAT SINK, the entire contents of which are incorporated herein by reference. The contour/mood lights typically illuminate a gear shift and gear panel of an automatic or standard transmission vehicle between two front seats in a vehicle. The contour/mood light is also known as a "PRNDL" light, as the light illuminates a gear panel showing the gear of the vehicle (Park, Reverse, Neutral, Drive or Low). An example of a contour/mood light and a map light is disclosed in U.S. Patent No. 6,614,579, entitled PROXIMITY SWITCH AND VEHICLE REARVIEW MIRROR ASSEMBLY INCORPORATING THE SAME AND HAVING A TRANSPARENT HOUSING, the entire contents of which are incorporated herein by reference. Furthermore, security lights illuminate when a security system of the vehicle is activated. A security light is also disclosed in U.S. Patent Application Publication No. ~~US2003/0043590 A1~~, No. 6,805,474.

[0024] In the illustrated example, the housing 12 of the rearview mirror subassembly 10 includes a carrier plate 32 located behind the reflective element 16. The illustrated housing 12 comprises a rear housing section 34 and a bezel 36, with the bottom opening 14 being located in a bottom wall 37 of the rear housing section 34. The bottom opening 14 can include a through hole in the bottom wall 37 of the rear housing section 34 or any translucent or transparent section of the bottom wall 37 of the rear housing section 34 that allows light can propagate therethrough. The carrier plate 32 can include a printed circuit board 38 connected

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 3

thereto. If the rearview mirror subassembly 10 is used in an interior rearview mirror, the carrier plate 32 is typically fixed in position within the housing 12. The carrier plate 32 of the interior rearview mirror can be used to maintain the position of the reflective element 16 and/or carry the circuit board 38. An example of an interior review mirror including a carrier plate and a circuit board is disclosed in U.S. Patent No. 6,239,899, entitled MIRROR WITH INTERNAL SUPPORT PLATE, the entire contents of which are hereby incorporated herein by reference. In the interior rearview mirror, the carrier plate 32 assists in maintaining the reflective element 16 in position within the housing 12. The illustrated carrier plate 32 is connected to a first ball 39 of the double ball mount 40. The rear housing section 34, bezel 36, carrier plate 32, printed circuit board 38 and their interconnections are well known to those skilled in the art. An example of a rear housing section, a bezel, a carrier plate, a printed circuit board and their interconnections with a mount is disclosed in U.S. Patent Application No. (GEN10-PP442)60/536,471 entitled REFLECTIVE ELEMENT HOLDER FOR REARVIEW MIRROR, the entire contents of which are hereby incorporated herein by reference.

[0038] The light emitted from the light source 22 of the present invention can be used as a map light, a contour/mood light and/or a security light. For example, the light source 22 can be used as a map light to selectively illuminate a portion of the interior of the vehicle. Accordingly, the light source 22 could be connected to a button (not shown) or other actuation device that would activate the light source 22 to thereby direct light out of the bottom opening 14 in the housing 12. Furthermore, the light source 22 can be used as a contour/mood light to illuminate the interior of the vehicle. The contour/mood light could be illuminated constantly or could be automatically illuminated when a sensor in the rearview mirror or interconnected thereto senses that ambient light in the vehicle has fallen below a certain level. Additionally, it is contemplated that the map light and the contour/mood light could comprise light emitted from one light source 22, with the light source 22 emitting light at a higher illumination when the map light is activated. An example of a contour/mood light and a map light is disclosed in U.S. Patent No. 6614579, entitled PROXIMITY SWITCH AND VEHICLE REARVIEW MIRROR ASSEMBLY INCORPORATING THE SAME AND HAVING A TRANSPARENT

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 4

HOUSING, the entire contents of which are incorporated herein by reference. Moreover, the light source 22 could be used as a security light that lights when a security system of the vehicle is activated. A security light is disclosed in U.S. Patent Application Publication No. ~~US2003/0043590 A1~~, No. 6,805,474, entitled VEHICLE LAMP ASSEMBLY WITH HEAT SINK, the entire contents of which are incorporated herein by reference. When the security light is employed, the bottom opening 14 preferably includes a red diffuser and/or lens.

[0042] As depicted in FIGS. 3A-3C, the interior rearview mirror may comprise first and second microphones 910a and 910b. Examples of microphones for use with the present invention are described in commonly assigned U.S. Patent Application Nos. 09/444,176 and 09/724,119, U.S. Patent Application Publication No. ~~US 2002/0110256 A1~~, 7,120,261, 6,614,911, 6,882,734, and PCT Application No. ~~PCT/US02/32386~~, Publication No. ~~WO2003/041285~~, the disclosures of which are incorporated in their entireties herein by reference. Although the two microphones are shown as being mounted to the backside of rear housing section 34, one or more such microphones may be mounted on the top of the interior rearview mirror (as shown in FIGS. 4A and 4B), on the bottom of the interior rearview mirror, or anywhere within the rear housing section 34 or bezel 36. Preferably, two microphones 910a and 910b are incorporated, one near each end, into the interior rearview mirror on the backside of the rear housing section 34 within recessed portions 912a and 912b. As shown in FIG. 3A, the microphones are constructed with acoustic dam 914 extending around transducer 916 within microphone housing 918. Additional details of this preferred construction are disclosed in commonly assigned International PCT Application No. ~~PCT/US02/32386~~, Publication No. ~~WO2003/041285~~, the entire disclosure of which is incorporated herein by reference. The audio systems including the microphones may be integrated, at least in part, in a common control with information displays and/or may share components with the information displays. In addition, the status of these systems and/or the devices controlled thereby may be displayed on the associated information displays.

[0043] As shown in FIGS. 4A and 4B, a single microphone 910 is provided on the top side of the housing 12. In this construction, it is preferable to include two transducers in microphone housing 918 in a manner similar to that disclosed in the above-referenced International PCT

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 5

~~Application No. PCT/US02/32386~~Publication No. WO2003/041285 and U.S. Patent

~~Application Publication No. US 2002/0110256 A1~~.No. 6,882,734.

[0044] The interior rearview mirror may also include first and second switches 922a and 922b.

Suitable switches for use with the present invention are described in detail in commonly assigned U.S. Patent Nos. 6,407,468, 6,420,800, 6,426,568, and 6,471,362, as well as commonly assigned U.S. Patent Application Publication No. ~~US 2002/0024713 A1~~,No. 6,614,579, the disclosures of which are incorporated in their entireties herein by reference.

These switches may be incorporated to control the illumination assemblies, the displays, the mirror reflectivity, a voice activated system, a compass system, a telephone system, a highway toll booth interface, a telemetry system, a headlight controller, a rain sensor, a tire pressure monitoring system, a navigation system, a lane departure warning system, adaptive cruise control system, etc. Any other display or system described herein or within the references incorporated by reference may be incorporated in any location within the associated vehicle and may be controlled using the switches.

[0045] The interior rearview mirror may also include first and second indicators 924a and 924b.

Various indicators for use with the present invention are described in commonly assigned U.S. Patent Nos. 5,803,579, 6,335,548, 6,441,943, 6,521,916, and ~~6,523,976~~, 6,670,207 and 6,805,474, as well as commonly assigned U.S. Patent Application Nos. ~~No. 09/723,675, 10/078,906, and 10/230,804~~, the disclosures of which are incorporated in their

entireties herein by reference. These indicators may indicate the status of the displays, the mirror reflectivity, a voice activated system, a compass system, a telephone system, a highway toll booth interface, a telemetry system, a headlight controller, a rain sensor, a security system, etc. Any other display or system described herein or within the references incorporated by reference may be incorporated in any location within the associated vehicle and may have a status depicted by the indicators.

[0046] The interior rearview mirror may further include first and second light sensors 926 and 928

serving as glare and ambient sensors, respectively. Preferred light sensors for use within the present invention are described in detail in commonly assigned U.S. Patent Nos.

5,923,027, 6,313,457, 6,359,274, 6,379,013, and ~~6,402,328~~, 6,679,608 and 6,831,268, U.S.

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 6

~~Patent Application Publication No. US 2002/0056806 A1, and in U.S. Patent Application No. 10/068,540,~~ the disclosures of which are incorporated in their entireties herein by reference.

The glare sensor 926 and/or ambient sensor 928 automatically control the reflectivity of a self dimming reflective element as well as the intensity of information displays and/or backlighting. The glare sensor 926 may also be used to sense headlights of trailing vehicles and the ambient sensor is used to detect the ambient lighting conditions that the system is operating within. In another embodiment, a sky sensor 930 may be incorporated positioned to detect light levels generally above and in front of associated vehicle. The sky sensor 930 may be used to automatically control the reflectivity of a self-dimming element, the exterior lights of a controlled vehicle and/or the intensity of information displays. The interior rearview mirror may further include sun-load sensors for sensing light levels towards the driver side and passenger side of the vehicle so as to control the climate control system of the vehicle.

[0047] Additionally, the interior rearview mirror may include first, second, third, fourth and fifth operator interfaces 932a-932e located in the bezel 36. Each operator interface is shown to comprise a backlit information display "A," "AB," "A1," "49," and "12". It should be understood that these operator interfaces can be incorporated anywhere in the associated vehicle, for example, in the mirror case, accessory module, instrument panel, overhead console, dash board, seats, center console, etc. Suitable switch construction is described in detail in commonly assigned U.S. Patent Nos. 6,407,468, 6,420,800, 6,426,568, and 6,471,362, ~~and 6,614,579, as well as, commonly assigned U.S. Patent Application Publication No. US 2002/0024713 A1,~~ the disclosures of which are incorporated in their entireties herein by reference. These operator interfaces may control the illumination assemblies, the displays, the mirror reflectivity, a voice activated system, a compass system, a telephone system, a highway toll booth interface, a telemetry system, a headlight controller, a rain sensor, a tire pressure monitoring system, a navigation system, a lane departure warning system, adaptive cruise control system, etc. Any other display or system described herein or within the references incorporated by reference may be incorporated in any location within the associated vehicle and may be controlled using an operator interface or interfaces. For example, a user may program a display or displays to depict predetermined information or may program a

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 7

display or displays to scroll through a series of information, or may enter set points associated with certain operating equipment with associated sensor inputs to display certain information upon the occurrence of a given event. In one embodiment, for example, a given display may be in a non-illuminated state until the engine temperature is above a threshold, the display then automatically is set to display the engine temperature. Another example is that proximity sensors located on the rear of a vehicle may be connected to a controller and combined with a display in a rearview mirror to indicate to a driver the distance to an object; the display may be configured as a bar that has a length proportional to the given distance.

[0055] Exterior light control systems as described in commonly assigned U.S. Patent Nos. 5,990,469, 6,008,486, 6,130,421, 6,130,448, 6,255,639, 6,049,171, 5,837,994, 6,403,942, 6,281,632, 6,291,812, 6,469,739, 6,465,963, 6,429,594, and 6,379,013, 6,653,614, 6,611,610, 6,621,616, 6,587,573, 6,861,809 and 6,774,988 U.S. Patent Application Publication No. US 2002/0005472 A1 and U.S. Patent Application Nos. 09/528,389, 09/678,586, 09/800,460, 60/404,879, and 60/394,583, 10/235,476, and 10/208,142, the disclosures of which are incorporated in their entireties herein by reference, may be incorporated in accordance with the present invention. These systems may be integrated, at least in part, in a common control with information displays and/or may share components with the information displays. In addition, the status of these systems and/or the devices controlled thereby may be displayed on the associated information displays. As disclosed in U.S. Patent Application No. 09/800,460, No. 6,587,573, both the compass sensors and the imaging sensor array 950, may be housed in accessory housing 952 attached to the mount bracket 29.

[0056] Moisture sensors and windshield fog detector systems are described in commonly-assigned U.S. Patent Nos. 5,923,027 and 6,313,457, 6,681,163 and 6,617,564, and U.S. Patent Application Nos. 09/970,728 and 09/970,962, the disclosures of which are incorporated in their entireties herein by reference. These systems may be integrated, at least in part, in a common control with information displays and/or may share components with the information displays. In addition, the status of these systems and/or the devices controlled thereby may be displayed on the associated information displays.

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 8

[0058] The interior rearview mirror may further include one or more antennae 940 for receipt and/or transmission of RF signals. Appropriate receiving, transmitting, and/or processing circuitry may further be included in or attached to the interior rearview mirror. Such antennae may be used for a cellular telephone system, a BLUETOOTH™ transmitting/receiving system, a remote keyless entry (RKE) system, a trainable garage door opener system, a tire pressure monitoring system, a global positioning satellite system, a LORAN system, etc. Some of these systems may share a common antenna and receiving, transmitting, processing, and display circuits where appropriate. Examples of a tire pressure monitoring system incorporated in an interior rearview mirror system are disclosed in commonly assigned U.S. Patent Nos. 6,215,389 and 6,431,712 and in U.S. Patent Application Nos. ~~09/359,144 and 09/949,955~~, No. 6,861,942 and 6,696,935, the entire disclosures of which are incorporated herein by reference. Examples of a GPS system incorporated in the interior rearview mirror are disclosed in commonly assigned U.S. Patent Nos. 6,166,698, 6,297,781, 6,396,446, and 6,980,092, in ~~U.S. Patent Application Publication No. US 2002/0032510 A1~~, the entire disclosures of which are incorporated herein by reference. An example of a LORAN system incorporated in an interior rearview mirror system is disclosed in commonly assigned U.S. Patent Application ~~Publication No. US 2002/0193946 A1~~ No. 6,539,306, the entire disclosure of which is incorporated herein by reference. An example of both a telephone/telematics system and a BLUETOOTH™ system incorporated in an interior rearview mirror system is disclosed in commonly assigned U.S. Patent ~~Application Publication No. US 2002/0032510 A1~~, No. 6,980,092, the entire disclosure of which is incorporated herein by reference. Examples of a trainable garage door opening systems and RKE systems incorporated in an interior rearview mirror system are disclosed in U.S. Patent No. 6,091,183, the entire disclosures of which are incorporated herein by reference.

[0060] The interior rearview mirror may further include one or more of the same or different types of displays. Examples of different types of displays include vacuum fluorescent, LCD, reverse LCD, LED, organic LED, dot matrix, backlit indicia, etc. For displays intended to simultaneously display significant amounts of information, the display disclosed in commonly assigned U.S. Patent No. 6,186,698 may be used, the entire disclosure of which is

Applicant : Jeremy A. Fogg et al.
Appln. No. : 10/826,047
Page : 9

incorporated herein by reference. Examples of backlit indicia panel displays are disclosed in commonly-assigned U.S. Patent Nos. 6,170,956 and 6,356,376, 6,870,655 and 6,572,233, and in U.S. Patent Application Nos. 09/586,813 and 09/664,151, the entire disclosures of which are incorporated herein by reference. Various displays used in interior rearview mirror systems are disclosed in commonly assigned U.S. Patent No. 6,356,376 and in U.S. Patent Application Publication No. US 2002/0154379 A1, Nos. 6,356,376 and 6,700,692, the entire disclosures of which are incorporated herein by reference.